

CLAIMS

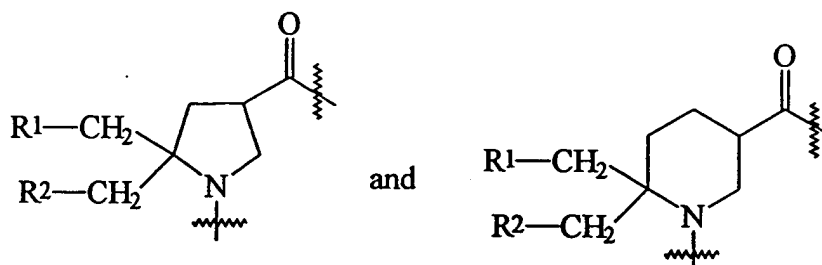
What is claimed is:

1. A compound comprising formula:



wherein n is an integer greater than 1; and

each A , independent of every other A , is selected from the group consisting of:



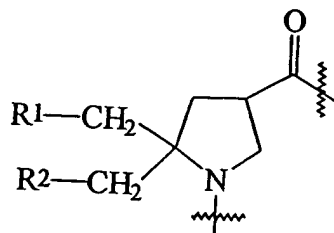
wherein R^1 and R^2 are independently selected from the group consisting of hydrogen, hydroxy, linear or branched C_1 - C_{16} -alkyl, alkenyl, or alkynyl; mono- or di- C_1 - C_{16} alkylamino; mono- or bicyclic aryl; mono- or bicyclic heteroaryl having up to 5 heteroatoms selected from N, O, and S; mono- or bicyclic aryl- C_1 - C_{16} -alkyl; mono- or bicyclic heteroaryl- C_1 - C_{16} -alkyl; $-(CH_2)_{0-6}-OR^3$, $-(CH_2)_{0-6}-SR^3$, $-(CH_2)_{0-6}-S(=O)-CH_2-R^3$, $-(CH_2)_{0-6}-S(=O)_2-CH_2-R^3$, $-(CH_2)_{0-6}-NR^3R^3$, $-(CH_2)_{0-6}-NHC(=O)R^3$, $-(CH_2)_{0-6}-NHS(=O)_2-CH_2-R^3$, $-(CH_2)_{0-6}-O-(CH_2)_{2-6}-R^4$, $-(CH_2)_{0-6}-S-(CH_2)_{2-6}-R^4$, $-(CH_2)_{0-6}-S(=O)-(CH_2)_{2-6}-R^4$, $-(CH_2)_{0-6}-S(=O)_2-(CH_2)_{2-6}-R^4$, $-(CH_2)_{0-6}-NH-(CH_2)_{2-6}-R^4$, $-(CH_2)_{0-6}-N-\{(CH_2)_{2-6}-R^4\}_2$, $-(CH_2)_{0-6}-NHC(=O)-(CH_2)_{2-6}-R^4$, and $-(CH_2)_{0-6}-NHS(=O)_2-(CH_2)_{2-6}-R^4$; wherein

R^3 is independently selected from the group consisting of hydrogen, C_1 - C_6 -alkyl, alkenyl, or alkynyl; mono- or bicyclic aryl, mono- or bicyclic heteroaryl having up to 5 heteroatoms selected from N, O, and S; mono- or bicyclic aryl- C_1 - C_6 -alkyl, mono- or bicyclic heteroaryl- C_1 - C_6 -alkyl; and

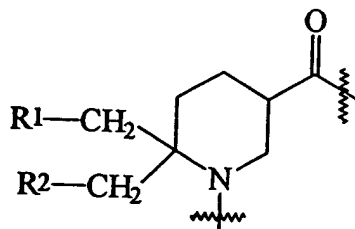
R^4 is selected from the group consisting of hydroxy, C₁-C₆-alkyloxy, aryloxy, heteroaryloxy, thio, C₁-C₆-alkylthio, C₁-C₆-alkylsulfinyl, C₁-C₆-alkylsulfonyl, arylthio, arylsulfinyl, arylsulfonyl, heteroarylthio, heteroarylsulfinyl, heteroarylsulfonyl, amino, mono- or di-C₁-C₆-alkylamino, mono- or diarylamino, mono- or diheteroarylamino, N-alkyl-N-arylamino, N-alkyl-N-heteroarylamino, N-aryl-N-heteroarylamino, aryl-C₁-C₆-alkylamino, carboxylic acid, carboxamide, mono- or di-C₁-C₆-alkylcarboxamide, mono- or diarylcarboxamide, mono- or diheteroarylcarboxamide, N-alkyl-N-arylcarboxamide, N-alkyl-N-heteroarylcarboxamide, N-aryl-N-heteroarylcarboxamide, sulfonic acid, sulfonamide, mono- or di-C₁-C₆-alkylsulfonamide, mono- or diarylsulfonamide, mono- or diheteroarylsulfonamide, N-alkyl-N-arylsulfonamide, N-alkyl-N-heteroarylsulfonamide, N-aryl-N-heteroarylsulfonamide, urea; mono- di- or tri-substituted urea, wherein the substituent(s) is selected from the group consisting of C₁-C₆-alkyl, aryl, heteroaryl; O-alkylurethane, O-arylurethane, and O-heteroarylurethane;

one of X or Y is hydrogen or an amino-terminal capping group;
 the other of X or Y is hydroxy or a carboxy-terminal capping group;
 and salts thereof.

2. A compound of Claim 1, selected from the group consisting of



3. A compound of Claim 1, selected from the group consisting of



4. A compound of Claim 1, wherein one of X or Y is hydrogen or an amino-terminal capping group selected from the group consisting of formyl, acetyl, tBoc, and Fmoc; and the other of X or Y is hydroxy or a carboxy-terminal capping group; selected from the group consisting of NH₂, NH(alkyl), and N(alkyl)₂.

5. A compound of Claim 1, wherein R¹ and R² are independently selected from the group consisting of hydrogen, hydroxy, linear or branched C₁-C₁₂-alkyl, alkenyl, or alkynyl; mono- or di- C₁-C₁₂ alkylamino; mono- or bicyclic aryl; mono- or bicyclic heteroaryl having up to 5 heteroatoms selected from N, O, and S; mono- or bicyclic aryl-C₁-C₁₂-alkyl; and mono- or bicyclic heteroaryl-C₁-C₁₂-alkyl,

6. A compound of Claim 1, wherein R¹ and R² are independently selected from the group consisting of -(CH₂)₀₋₆-OR³, -(CH₂)₀₋₆-SR³, -(CH₂)₀₋₆-S(=O)-CH₂-R³, -(CH₂)₀₋₆-S(=O)₂-CH₂-R³, -(CH₂)₀₋₆-NR³R³, -(CH₂)₀₋₆-NHC(=O)R³, -(CH₂)₀₋₆-NHS(=O)₂-CH₂-R³, -(CH₂)₀₋₆-O-(CH₂)₂₋₆-R⁴, -(CH₂)₀₋₆-S-(CH₂)₂₋₆-R⁴, -(CH₂)₀₋₆-S(=O)-(CH₂)₂₋₆-R⁴, -(CH₂)₀₋₆-S(=O)₂-(CH₂)₂₋₆-R⁴, -(CH₂)₀₋₆-NH-(CH₂)₂₋₆-R⁴, -(CH₂)₀₋₆-N-{(CH₂)₂₋₆-R⁴}₂, -(CH₂)₀₋₆-NHC(=O)-(CH₂)₂₋₆-R⁴, and -(CH₂)₀₋₆-NHS(=O)₂-(CH₂)₂₋₆-R⁴.

7. A compound of Claim 6, wherein R³ is independently selected from the group consisting of hydrogen, C₁-

C₆-alkyl, alkenyl, or alkynyl; mono- or bicyclic aryl, mono- or bicyclic heteroaryl having up to 5 heteroatoms selected from N, O, and S; mono- or bicyclic aryl-C₁-C₆-alkyl, mono- or bicyclic heteroaryl-C₁-C₆-alkyl; and

R⁴ is selected from the group consisting of hydroxy, C₁-C₆-alkyloxy, aryloxy, heteroaryloxy, thio, C₁-C₆-alkylthio, C₁-C₆-alkylsulfinyl, C₁-C₆-alkylsulfonyl, arylthio, arylsulfinyl, arylsulfonyl, heteroarylthio, heteroarylsulfinyl, heteroarylsulfonyl, amino, mono- or di-C₁-C₆-alkylamino, mono- or diarylamino, mono- or diheteroarylamino, N-alkyl-N-arylamino, N-alkyl-N-heteroarylamino, N-aryl-N-heteroarylamino, aryl-C₁-C₆-alkylamino, carboxylic acid, carboxamide, mono- or di-C₁-C₆-alkylcarboxamide, mono- or diarylcarboxamide, mono- or diheteroarylcarboxamide, N-alkyl-N-arylcarboxamide, N-alkyl-N-heteroarylcarboxamide, N-aryl-N-heteroarylcarboxamide, sulfonic acid, sulfonamide, mono- or di-C₁-C₆-alkylsulfonamide, mono- or diarylsulfonamide, mono- or diheteroarylsulfonamide, N-alkyl-N-arylsulfonamide, N-alkyl-N-heteroarylsulfonamide, N-aryl-N-heteroarylsulfonamide, urea; mono- di- or tri-substituted urea, wherein the substituent(s) is selected from the group consisting of C₁-C₆-alkyl, aryl, heteroaryl; O-alkylurethane, O-arylurethane, and O-heteroarylurethane.

8. A compound of Claim 6, wherein

R³ is independently selected from the group consisting of hydrogen, C₁-C₆-alkyl, alkenyl, or alkynyl; and mono- or bicyclic aryl; and

R⁴ is selected from the group consisting of hydroxy, C₁-C₆-alkyloxy, aryloxy, heteroaryloxy, thio, C₁-C₆-alkylthio, C₁-C₆-alkylsulfinyl, C₁-C₆-alkylsulfonyl, arylthio, arylsulfinyl, arylsulfonyl, heteroarylthio, heteroarylsulfinyl, heteroarylsulfonyl, amino, mono- or di-C₁-C₆-alkylamino, mono- or diarylamino, mono- or diheteroarylamino, N-alkyl-N-arylamino, N-alkyl-N-heteroarylamino, N-aryl-N-heteroarylamino, and aryl-C₁-C₆-alkylamino.

9. A compound of Claim 6, wherein

R^3 is selected from the group consisting of mono- or bicyclic heteroaryl having up to 5 heteroatoms selected from N, O, and S; mono- or bicyclic aryl-C₁-C₆-alkyl, and mono- or bicyclic heteroaryl-C₁-C₆-alkyl; and

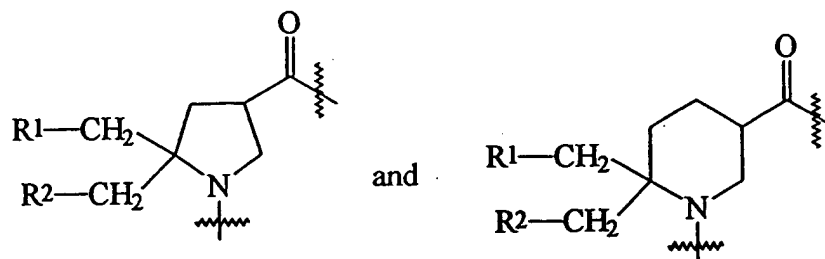
5 R^4 is selected from the group consisting of carboxylic acid, carboxamide, mono- or di-C₁-C₆-alkylcarboxamide, mono- or diarylcarboxamide, mono- or diheteroarylcarboxamide, N-alkyl-N-arylcarboxamide, N-alkyl-N-heteroarylcarboxamide, N-aryl-N-heteroarylcarboxamide, sulfonic acid, sulfonamide, mono- or di-C₁-C₆-
10 alkylsulfonamide, mono- or diarylsulfonamide, mono- or diheteroarylsulfonamide, N-alkyl-N-arylsulfonamide, N-alkyl-N-heteroarylsulfonamide, N-aryl-N-heteroarylsulfonamide, urea; mono- di- or tri-substituted urea, wherein the substituent(s) is selected from the group consisting of C₁-C₆-alkyl, aryl, heteroaryl; O-alkylurethane, O-arylurethane, and O-
15 heteroarylurethane.

10. A compound of Claim 1, wherein R^1 and R^2 are independently selected from the group consisting of hydrogen, hydroxy, linear or branched C₁-C₆-alkyl, alkenyl, or alkynyl; $-(CH_2)_0-6-OR^3$; mono- or di- C₁-C₆ alkylamino; mono- or bicyclic
20 aryl; and mono- or bicyclic aryl-C₁-C₆-alkyl.

11. A compound of Claim 1, wherein R^1 and R^2 are independently selected from the group consisting of hydrogen, hydroxy, linear or branched C₁-C₆-alkyl, monocyclic aryl, and monocyclic aryl-C₁-C₆-alkyl.

25 12. A method of preparing a combinatorial library of oligomers or polymers of cyclic imino carboxylic acids comprising, the method comprising at least two successive iterations of:

(a) covalently linking a first subunit via its C terminus to a plurality of
30 separable solid substrates, the first subunit selected from the group consisting of compounds of structure



wherein R^1 and R^2 are independently selected from the group consisting of hydrogen, hydroxy, linear or branched C_1 - C_{16} -alkyl, alkenyl, or alkynyl; mono- or di- C_1 - C_{16} alkylamino; mono- or bicyclic aryl; mono- or bicyclic heteroaryl having up to 5 heteroatoms selected from N, O, and S; mono- or bicyclic aryl- C_1 - C_{16} -alkyl; mono- or bicyclic heteroaryl- C_1 - C_{16} -alkyl; $-(CH_2)_{0-6}OR^3$, $-(CH_2)_{0-6}SR^3$, $-(CH_2)_{0-6}S(=O)-CH_2-R^3$, $-(CH_2)_{0-6}S(=O)_2-CH_2-R^3$, $-(CH_2)_{0-6}NR^3R^3$, $-(CH_2)_{0-6}NHC(=O)R^3$, $-(CH_2)_{0-6}NHS(=O)_2-CH_2-R^3$, $-(CH_2)_{0-6}O-(CH_2)_{2-6}-R^4$, $-(CH_2)_{0-6}S-(CH_2)_{2-6}-R^4$, $-(CH_2)_{0-6}S(=O)-(CH_2)_{2-6}-R^4$, $-(CH_2)_{0-6}S(=O)_2-(CH_2)_{2-6}-R^4$, $-(CH_2)_{0-6}NH-(CH_2)_{2-6}-R^4$, $-(CH_2)_{0-6}N-\{(CH_2)_{2-6}-R^4\}_2$, $-(CH_2)_{0-6}NHC(=O)-(CH_2)_{2-6}-R^4$, and $-(CH_2)_{0-6}NHS(=O)_2-(CH_2)_{2-6}-R^4$; wherein

R^3 is independently selected from the group consisting of hydrogen, C_1 - C_6 -alkyl, alkenyl, or alkynyl; mono- or bicyclic aryl, mono- or bicyclic heteroaryl having up to 5 heteroatoms selected from N, O, and S; mono- or bicyclic aryl- C_1 - C_6 -alkyl, mono- or bicyclic heteroaryl- C_1 - C_6 -alkyl; and

R^4 is selected from the group consisting of hydroxy, C_1 - C_6 -alkyloxy, aryloxy, heteroaryloxy, thio, C_1 - C_6 -alkylthio, C_1 - C_6 -alkylsulfinyl, C_1 - C_6 -alkylsulfonyl, arylthio, arylsulfinyl, arylsulfonyl, heteroarylthio, heteroarylsulfinyl, heteroarylsulfonyl, amino, mono- or di- C_1 - C_6 -alkylamino, mono- or diarylamino, mono- or diheteroarylamino, N-alkyl-N-arylamino, N-alkyl-N-heteroarylamino, N-aryl-N-heteroarylamino, aryl- C_1 - C_6 -alkylamino, carboxylic acid, carboxamide, mono- or di- C_1 - C_6 -alkylcarboxamide, mono- or diarylcarboxamide, mono- or diheteroarylcarboxamide, N-alkyl-N-arylcarboxamide, N-alkyl-N-heteroarylcarboxamide, N-aryl-N-heteroarylcarboxamide, sulfonic acid, sulfonamide, mono- or di- C_1 - C_6 -alkylsulfonamide, mono- or diarylsulfonamide, mono- or diheteroarylsulfonamide, N-alkyl-N-arylsulfonamide, N-alkyl-N-

heteroarylsulfonamide, N-aryl-N-heteroarylsulfonamide, urea; mono- di- or tri-substituted urea, wherein the substituent(s) is selected from the group consisting of C₁-C₆-alkyl, aryl, heteroaryl; O-alkylurethane, O-arylurethane, and O-heteroarylurethane;

5 one of X or Y is hydrogen or an amino-terminal capping group;
the other of X or Y is hydroxy or a carboxy-terminal capping group;
and salts thereof;

(b) randomly dividing the plurality of substrates into at least two sub-groups; and

10 (c) deprotecting the first subunits attached to the solid substrates of the at least two sub-groups; then

(d) in separate, independent reactions, covalently linking to the first subunit of each of the at least two sub-groups, a second subunit independently selected from the group listed in step (a); and then

15 (e) combining the at least two sub-groups into a single plurality; and then

(f) repeating steps (b) through (e).

13. A combinatorial library of oligomers or polymers of cyclic imino carboxylic acids comprising a plurality of distinct oligomers or polymers of cyclic imino carboxylic acids covalently linked to a solid support, the combinatorial library
20 produced according to the method of Claim 12.

14. A combinatorial array comprising a plurality of distinct oligomers or polymers of compounds according to Claim 1 at selected, known locations on a
25 substrate or in discrete solutions, wherein each of the oligomers or polymers of Claim 1 is substantially pure within each of the selected known locations or discrete solutions and has a composition that is different from other oligomers or polymers disposed at other selected and known locations on the substrate or in other discrete solutions.